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Patent claims

- 5 1. A method for heating up the intake air of an  
internal combustion engine (8) during the preglow  
phase or start-up phase by means of at least one  
electrically heatable heating element (12) in the  
10 intake line (10) of the internal combustion  
engine, the heating power being controlled by a  
control unit (13) of the engine electronics as a  
function of the operating data of the internal  
combustion engine,  
characterized
- 15 - in that during the preglow phase (1,2,3), the  
heating element (12) is initially supplied with  
full current (1) until the heating element  
reaches its reference temperature and in that  
20 after the reference temperature has been reached  
and until the start-up phase, a post-heating  
phase (2,3) begins in which the heating element  
(12) is kept at a constant temperature by means  
of a relatively low power,
- 25 - and in that during the start-up phase, in a  
first time period (4a), the heating element (12)  
is switched off, and in that in a second time  
period (4b) in which the speed of the internal  
combustion engine is raised to the starting  
30 speed, the heating element (12) is switched on  
again.
2. The method as claimed in claim 1,  
characterized
- 35 in that a start-readiness phase (3), in which the  
heating element (12) is operated at a further  
reduced power, follows the post-heating phase (2).

3. The method as claimed in claim 1 or 2,  
characterized  
in that in a subsequent afterglow phase (5), an  
afterglow at a reduced heating power is carried  
5 out after the idling speed has been reached and  
until an applicable engine temperature is reached.
4. The method as claimed in one of claims 1 to 3,  
characterized  
10 in that in the afterglow phase (5), the charge air  
temperature is kept constant by means of the  
heating element (12) during an increase in speed  
(6).
- 15 5. The method as claimed in one of claims 1 to 3,  
characterized  
in that the afterglow period is determined at the  
beginning of the start process as a function of  
the coolant temperature or the charge air  
20 temperature.
6. The method as claimed in one of claims 1 to 4,  
characterized  
in that the heating element is switched off in a  
25 timed or temperature-controlled manner.